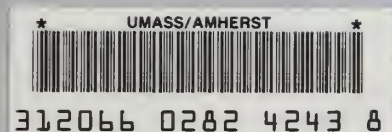


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*In Massachusetts*

*A Discussion Paper*

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*Massachusetts Office of Comprehensive Health Planning*





# **PARTNERSHIP FOR HEALTH IN MASSACHUSETTS**

Office of Comprehensive Health Planning

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Executive Office of Human Services

## HOSPITAL UTILIZATION AND UTILIZATION REVIEW IN MASSACHUSETTS

A DISCUSSION PAPER  
BY  
STEVEN MOELLER, L.L.B., M.P.A.

SPRING, 1973

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## INTRODUCTION

This paper was prepared as a brief summary of some of the ideas and conclusions produced by the author's research on patterns of hospital utilization, and the potential for utilization review in Massachusetts. The scope of discussion has been limited, here, to some simple quantitative measures of acute-care hospital utilization. Some potentially important areas which interact with the hospital care sector have been neglected: i.e. the ambulatory care sector, the availability of lower levels of medical care (E.C.F.'s home care programs, etc.), and some cost and reimbursement factors. This paper omits much of the data and discussion which are necessary to support some of its arguments and conclusions. It is presented in this way in order to stimulate discussion about some of the issues involved in utilization review, and to help focus the need for further study.



### THE OVER-UTILIZATION PROBLEM

Massachusetts has an over-utilization problem in its acute-care general hospitals. That is, patients are being admitted to acute-care facilities, and/or are staying there for days under circumstances where acute-care is medically unnecessary. The mass of the Commonwealth's utilization statistics begins to suggest this. With the exception of the six north-central states of the United States, -- most of which are predominantly rural, and have stagnant or declining populations -- Massachusetts has the highest hospital utilization rate (patient-days/1,000 population) in the nation. The Commonwealth has proportionately more of its residents hospitalized each year than any of the other large industrial states. There is significantly more hospitalization per resident than in states such as Illinois and Pennsylvania, and 35%-40% more than in states such as California or Washington. There are two components to the measure of a state's hospital utilization: the admissions per 1,000 residents, and the average length of stay in its hospitals. On both of these measures, Massachusetts stands well above the national averages.

The Commonwealth's problem is not just with the aggregate amount of hospitalization, but with the fact that so much of it appears to be medically unjustified. Subjective estimates by Massachusetts physicians suggest that there is a "constant residual" of 10%-15% patient-days which are unnecessary, either because hospital admission is medically unjustified in the first place, or because patients stay hospitalized for more days than are required by their condition. A 1967 study



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at Massachusetts hospitals concluded that 4%-8% of all medical, surgical, and diagnostic admissions were either medically unnecessary, or else involved procedures which could be done as well outside of the hospital.<sup>1</sup> Unfortunately, there have been few other studies of the state's hospitals which have tried to evaluate admissions and stays on the basis of criteria of "necessity" or "good practice." However, studies done on other states with hospital utilization patterns similar to Massachusetts' can be taken as indirect evidence that the degree of hospital misuse may be greater than suspected. Surveys in some New York hospitals, for example, have concluded that as many as 18%-24% patient-days do not require acute-care hospitalization.<sup>2</sup>

Finally--as a corollary to evidence of hospital overuse--it does not appear that Massachusetts greater use of acute-care hospitalization results in better health or less morbidity for its residents. Judged by the common statistical indicators of a population's general health (which must indirectly reflect the quality of health care provided) the Commonwealth does no better than many states which make less use of their hospitals. The Massachusetts infant mortality rates and death rates from certain diseases are actually higher than those for states with 30% less hospitalization. The implication is that the state's population--considered on this aggregate level--does not receive noticeably better health care in return for its greater expenditure on hospitalization.

#### The Roemer-Feldstein Hypothesis

Most Massachusetts physicians and hospital administrators do not equate the state's high hospitalization rate with "over"-utilization or improper utilization. They argue, to the contrary, that it is a product



of legitimate medical demand, or a by-product of high-quality medical care. But a significant minority of physicians and medical educators accept over-utilization in Massachusetts hospitals as a fact. Among the latter group, various explanations for it have been offered. The most convincing of these explanations is the "bed" hypothesis: the argument that Massachusetts has high hospital utilization simply because the state has a high ratio of hospital beds per population, and that these beds tend to be filled somewhat independently of medical necessity.

For purposes of discussion, the "bed" argument is referred to here as the Roemer-Feldstein hypothesis, after the two researchers whose work demonstrated that an increase in hospital beds in a defined area leads to an increase in hospital utilization, and that this increase is independent of any changes in population, health characteristics, or other factors.<sup>3</sup> Feldstein's research in the British National Health Services demonstrated that the hospital admissions rate of a regional population, as well as their lengths of stay for diagnoses, tends to be determined by the availability of hospital beds in the region.<sup>4</sup> The theoretical structure of Feldstein's work suggests that the observed demand for hospital services--admissions and hospital-days--tend to expand to fill the available supply of hospital beds. Hence, the correlation observed between hospital utilization rates and the bed/population ratios in various regions is an indication of demand adjusting itself to meet supply. Another important conclusion of Feldstein's research was that--within the observable range of supply--the demand for hospital-days appears to be "insatiablé;" i.e., no matter how many hospital beds are made available to a given population, the admissions rate and lengths of stay will always increase to fill the available supply.<sup>5</sup>



The exact processes by which the demand for hospitalization adjusts itself to available supply are not completely understood. It is part of the conventional wisdom of American hospitals that when bed supply becomes temporarily "tight" there is a tendency for physicians to discharge their patients earlier, and the admission of "marginal" patients (whose medical condition is not serious enough to make admission to acute-care a real necessity) tends to decrease. The effect of bed "tightness" in American hospitals is particularly noticeable in optional surgery cases, such as tonsilectomies and hysterectomies. The incidence of these operations fluctuates greatly according to the availability of hospital beds. The effect seems to work in the opposite direction also: when there is a significant increase in the supply of available beds, attending physicians will tend to keep their patients hospitalized for a greater number of days, and there are no constraints on the admission of "marginal" patients. These effects observed in American hospitals are short-term phenomena, and account for only temporary changes in physicians' practices. However, it can be seen how a continual pattern of relative bed availability in one region, or bed shortages in another, could effect permanent changes in physicians' behavior, and would eventually institutionalize certain medical practices as a response to an historic situation of "over-bedding" or "under-bedding" in different regions. This would explain the variances in medical practices found in different regions of Britain.

An alternative way of applying the Roemer-Feldstein hypothesis to American hospitals is to view utilization in the economic-financial dimension: given a fixed population and a number of hospital-beds (the ratio will be determined by historic trends, such as factors influencing hospital construction, population shifts, etc.) it will be necessary for a certain percentage of the population to be hospitalized in order for the



hospitals to financially survive. American hospitals must generally maintain an average occupancy rate of 70%-80% to be viable; any significant decrease in a hospital's occupancy rate threatens its survival. Presumably, this might create some sort of response by the hospital--an "institutional momentum" --to maintain its occupancy rate. In a region with an unusually high ratio of hospital beds to population, the continued existence of only "average" admission rates would soon lead to many hospitals' bankruptcy. Therefore--insofar as institutional "momentum" is able to affect medical practices--the hospitals in an over-bedded region are required to hospitalize a larger percentage of the population in order to survive as institutions.

A modification of this "financial" view of the Roemer-Feldstein hypothesis is to consider hospital beds as only a surrogate measure of some other factors, such as fixed overhead costs and hospital employees, which are the real determinants of hospital utilization. In this view, it is the necessity of meeting hospital overhead and the inability (or unwillingness) to control or reduce hospital payrolls which influences hospital admissions and length of stay. Data collected by the Vermont Health Information Center tends to support this view: their study concludes that the percentage of hospital employees in a region is statistically the best predictor of hospital utilization--a better predictor than hospital beds of any other factor. It was found that the percentage of hospital employees in various state regions in 1963 was, statistically, an extremely accurate predictor of the regional Medicare and Medicaid expenditures in the late 1960's.<sup>6</sup>

#### National Patterns of Utilization

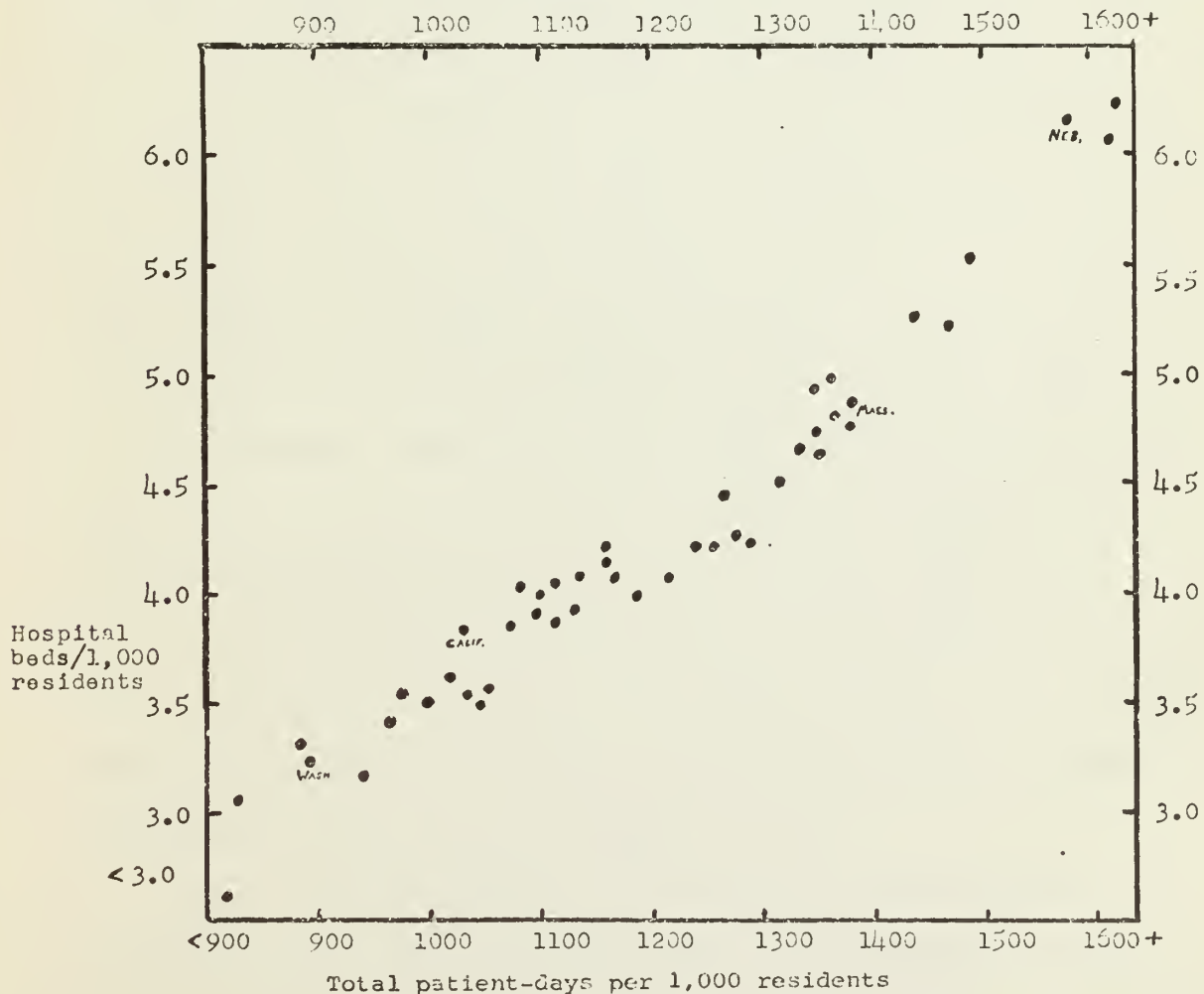
The Roemer-Feldstein hypothesis has tremendous explanatory value in accounting for the great variations in hospital utilization observed among different states and regions in the United States. Figure 1 presents, graphically, the relationship between total hospital utilization and the





availability of hospital beds in 45 states. From the distribution of states along the diagonal axis, it appears that hospitalization per 1,000 residents is almost a linear function of the ratio of hospital beds to population. Residents of states on the lower-left side of the distribution have shorter lengths of stay. The differential in hospital utilization between relatively "under-bedded" and "over-bedded" states creates variances in patient-days/1,000 residents of 30% to 60%. There is no compelling evidence that the residents of the high-utilizing states have greater medical needs than residents of the low-utilizing states.

**Figure 1**  
Relationship of hospital bed/population ratios to total hospital utilization, 1970



Source: data computed from American Hospital Association statistics, and Statistical Abstract of U.S.

Each dot represents aggregate data from one state (several states have been omitted because of inadequate data, or because "spillover" effects to other states distort data--i.e., Connecticut is omitted).



To some extent, Figure 1 suggests that hospital utilization is a regional phenomena--determined by regional changes in population, patterns of hospital construction over the past decades, and the consequent adjustment of manifest "demand" (medical practices) to available hospital supply. Almost all of the states in the lower-left side of the distribution are Mountain or Pacific states--regions which have experienced tremendous population growth in the last two decades. Since hospital construction could not "keep pace" with population growth, these states have maintained a relatively low ratio of hospital beds to population. Consequently, patterns of low admission rates and short lengths of stay have been established in their hospitals. Conversely, the six dots located above and to the right of Massachusetts in Figure 1 represent the five West North Central states and West Virginia. These states have either had below-average population growth over the past two decades (i.e. Nebraska, Minnesota) or else have actually suffered population decline (North Dakota, West Virginia). Allowing for even marginal hospital construction, this has produced abnormally high ratios of hospital beds to population during the 1960's. Not surprisingly, the 1970 hospitalization statistics for these states show extremely high admission rates and fairly long lengths of stay.

A more detailed comparison of Massachusetts and California is suggestive of the general bed-utilization patterns shown in Figure 1. The two states are similar in some respects: both are primarily industrial states, with populations 85%-90% urban; both have cities which are considered



"medical centers" for catchment areas going beyond the state; both states have an extremely high ratio of physicians to residents (Massachusetts ranks second nationally in this measure, California ranks fourth). However, Massachusetts has 36%-37% more hospital utilization per 1,000 residents than California. California residents are less likely to be admitted to acute-care hospitals than Massachusetts residents, and they spend less time in them when they are admitted. There is no compelling data which indicates that the Massachusetts population is, on the average, "sicker" than California's, or has greater need for hospitalization. Major indices of a population's health--such as infant mortality rates--are almost exactly the same for the two states.

A simple explanation of Massachusetts' higher utilization--as suggested by Figure 1--is that since the state has 27% more beds per population than California, it is bound to have proportionately (at least) more hospitalization. A more sophisticated explanation, which takes some account of the time dimension, is provided by the "conventional wisdom" of some health administrators and insurance company analysts regarding California. The explanation: the majority of the physicians now practicing in California did their internships and residencies in the state during the post-World War II period. Since the state was then experiencing a population explosion, there existed a chronic hospital bed shortage--the state was relatively more "under-bedded" than it is even now. Consequently, these physicians received the most important part of their medical training in an environment where hospital beds were "tight" and there existed a certain pressure to discharge patients quickly. This resulted in the institutionalizing of norms--i.e., "good medical practice"--for admission and discharge patterns which tended to minimize acute-care hospitalization. This has now led to the regional



differential in hospital practice observable between California and the noreastern states. This effect over time is quite consistent with the Roemer-Feldstein hypothesis.

### Inadequacy of Environmental Explanations

The correlation between hospital beds and hospital use suggested by Figure 1 does not, by itself, prove the applicability of the Roemer-Feldstein hypothesis to the U.S. as a whole. Opponents of this view can cite the correlation as evidence of exactly the opposite interpretation: that hospital bed supply has adjusted itself to "real" medical demand, and/or that residents of the high-utilizing states have a greater need for hospitalization. However, in view of the vast differences in hospitalization observed between different states, the interpretation that "supply responds to demand" must be based upon a number of environmental explanations.

An "environmental" explanation focuses on some factor in a state or region which explains why hospitals there are legitimately utilized to a greater degree than hospitals in other states or regions.

Some of the "environmental explanations" most commonly cited to explain why certain northeastern states--like Massachusetts--have greater hospital utilization rates than states in the southern and western regions of the country:

1. The general medical need explanation--argues that populations in the high-utilizing states are simply "sicker" than other populations, and hence high hospitalization rates are a legitimate response to real medical needs.
2. The medical center or statistical explanation--argues that cities such as Boston or New York are major medical centers whose hospitals attract patients from outside the state--particularly those with lengthy or difficult diagnostic and surgical problems. Hence, the hospitalization statistics for the state conceal a great quantity of utilization consumed by out-of-state residents, particularly those from "under-bedded" states.
3. The teaching hospital explanation--argues that Massachusetts has a very high proportion of teaching hospitals. Since it is generally





known that teaching hospitals have longer lengths of stay for most diagnoses than non-teaching hospitals (and also, presumably, handle more difficult cases and provide better quality medical care) this explains the proportionately greater number of patient-days in the state.

4. The climate explanation--argues that the low-utilizing states have milder, warmer climates (i.e. California, New Mexico) which produce less sickness and demand for hospitalization in comparison with the harsher climates of high-utilizing states like Illinois, Minnesota, or Massachusetts.
5. The alternative facilities explanation--argues that many hospital patient-days in high utilizing states are used as a substitute for care which could be given in institutions providing lower levels of care--i.e. Extended Care Facilities, nursing homes, --but lack of a sufficient number of these alternative facilities forces patients to stay in hospitals.
6. The insurance reimbursement explanation--argues that many unnecessary admissions to hospitals in high-utilizing states occur because medical insurance policies will only cover medical care given in the hospital, and not outpatient or ambulatory care.
7. The age-composition explanation--argues that the high-utilizing states have a generally "older" population, hence a greater need for hospitalization. Since the need for hospitalization is closely related to age, a greater percentage of residents in a population in the 45-65 and 65+ age groups would legitimately raise the population's hospitalization rate.

This brief paper cannot generate the data or analysis to adequately evaluate all of these possible explanations for variations in hospital utilization. However, some initial data has been looked at to give "first cut" evaluations of their plausibility. This initial data indicates that none of the "environmental" arguments can sufficiently explain the large variations in hospitalization observed among different states and regions. Only one of them--the age-composition argument--seems to explain even a significant portion of the variation.

Discussing the "environmental" explanations in the order they were presented:

1. It is impossible to completely confirm or deny the medical need argument on the basis of presently available data. There are no



statistical indices sophisticated enough, and no data-base broad enough, to make quantitative predictions of the real medical "needs" of various populations. The planning of health resources usually proceeds on the basis of manifest demand for treatment, rather than any real measure of need - which is precisely the process brought in question by the Roemer-Feldstein hypothesis. However, in the absence of perfect data on need for hospitalization, the medical need argument can be attacked on three general grounds:

- a. If age, sex, and population are controlled for, then it simply defies common sense to assume that the populations of some states are on the average 30%-65% "sicker" than the populations of other states. The location of the distribution in Figure 1 does not suggest any patterns or "types" of populations which could account for the variations in hospitalization noticed.
- b. If the "demand determines supply" argument is to be accepted, then a corollary to this must be that the states with the highest utilization rates are also the ones which experienced the greatest demand for hospitalization, and which in consequence build the greatest number of hospital beds for their populations. One of the strengths of Feldstein's analysis in Britain was that this corollary had already been disproved: there had been almost no hospital construction in that country for decades, and thus the regional pattern of bed supply was clearly a "legacy of history" rather than a response to current demand patterns. A situation similar to this exists in some of the



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ERRATUM:

Page 39, #3. should read:

3. Roemer, M.I., 1961. "Bed supply and hospital utilization", Hospitals,  
35 (November 1): 36-42.



American states which have the highest rates, such as North Dakota and West Virginia. In these states there has been only marginal hospital construction in recent years, and it is clear that their high bed/population ratios are the result of stagnant or declining populations, rather than the construction of hospital beds attempting to keep pace with medical demand.

- c. Although there are no statistical indices to predict medical need for various populations, there are several indices which are generally accepted as being crude measures of the general level of health in a population. If a "demand determines supply" argument is postulated, then we would expect that these indices would be somehow correlated to the hospital utilization rates in different states. A comparison of several of these indices for some of the high-utilizing states (Massachusetts, Nebraska, North Dakota); one state with moderately - high-utilization (Rhode Island); and two states with low utilization (California, Oregon) shows that this is not the case:

	<u>Infant Mortality</u> white population; deaths/1,000 live births	<u>Diseases of</u> <u>Early Infancy</u> deaths/1,000 population
Massachusetts	19.2	19.9
Nebraska	17.1	18.9
North Dakota	16.9	16.3
Rhode Island	20.6	21.8





	<u>Infant Mortality</u> white population; deaths/1,000 live births	<u>Diseases of</u> <u>Early Infancy</u> deaths/1,000 population
California	18.4	19.2
Oregon	19.3	17.8

Source: Statistical Abstract of U.S., 1972

2. The medical center argument assumes that there is a substantial "inflow" of out-of-state patients into Massachusetts hospitals. Some minimal data from the Patient Origins Study by the Massachusetts Department of Public Health, as well as data from other states, suggests that the net amount of "inflow" would not be enough to account for a significant portion of the state's high utilization rate. The patient Origins Study estimated the total "inflow" of out-of-state residents admitted to Massachusetts hospitals in 1971 as approximately 29,000 or somewhat more than 3% of all admissions. However, in order to obtain a meaningful net inflow figure, the number of Massachusetts residents who are admitted to hospitals in other states needs to be subtracted from the D.P.H. figure. This patient "outflow" is probably much greater than is generally thought. A study by the Rhode Island Public Health Department indicates, surprisingly, that the flow of the state's residents into Massachusetts hospitals is actually less than the "outflow" of Massachusetts Residents into Rhode Island hospitals. Although 4100 Rhode Island residents were admitted to Massachusetts hospitals in 1971, the total "outflow" of Massachusetts residents to Providence hospitals was probably greater than 4500. Comparable "outflow" figures are not available from other neighboring states. But on the basis of the Rhode Island data it could certainly be expected that there is considerable "outflow" of Massachusetts residents from the central and western regions of the state into Connecticut and New York hospitals. All things considered, it would be extremely unlikely if the Net "inflow" of out-of-state residents into Massachusetts hospitals



in 1971 were any greater than 15,000 or approximately 1.7% of all admissions in the state. This estimate is probably on the high side, and the real figure may well be less than 1%. Thus, the "inflow" of out-of-state residents probably cannot account for a significant portion of the state's high hospitalization statistics.

3. The teaching hospital argument is contradicted by data on medical training programs in different states. The number of internships and residencies offered in a state's hospitals is not at all correlated to the state's utilization rate. The presence of large urban centers is the best predictor of the amount of medical training done in a state's hospitals, and this factor is not related to utilization rates. To take two states as an example: Massachusetts has 37% more hospitalization than California, but the ratio of internships to hospital beds for the two states is almost exactly the same--Massachusetts has 21.4 internships per 1,000 beds, California has 21.1.<sup>8</sup>

4. There was insufficient time to adequately evaluate the alternative facilities argument. National U.S. H.E.W. and Census Bureau figures on "nursing homes" and "Extended Care Facilities" are not precisely defined, and it can't be determined what levels of care are available in these beds, and how they might relate to utilization of acute-care facilities. For whatever it is worth, though: a quick look at the ratios of nursing home beds and E.C.F. beds to state populations does not suggest any obvious relationship to hospital utilization in the states. Some of the low-utilizing states have above-average numbers of nursing home and E.C.F. beds, while others have only very poor availability of such beds. It may very well be that the availability of skilled nursing and E.C.F. beds does have some effect on acute-



care utilization; but if so, the effect is probably: a.) a marginal factor, which tends to be dominated by other determinants of hospital utilization; b.) mostly related to the Medicare population in hospitals; c.) more a function of the availability of placement in such facilities, rather than the existence of the facilities themselves. .

5. The insurance reimbursement argument requires the assumption that the residents of different states or regions have different patterns of medical coverage which either encourage or discourage unnecessary use of hospitalization. Data on national patterns of insurance coverage could only be obtained from individual Blue Cross offices, and the National Blue Cross Association headquarters in Chicago. The general opinion of the Blue Cross officials was that while there were some regional variations in inpatient vs. outpatient coverage, these variations were unrelated to hospital utilization differentials. They thought that it was "grasping at straws" to try to explain regional variations in utilization on the basis of minor variations in patterns of outpatient coverage.

It is difficult to summarize the Blue Cross data on regional patterns of coverage because of the multiplicity of policy types and coverage formulae involved. Generally, Blue Plan members in the high-utilizing northeastern states have as good, or better coverage for outpatient services--i.e. diagnostic laboratory and X-ray testing, outpatient surgery, etc.--than do members in low-utilizing western states. This suggests that outpatient insurance coverage is not a factor in explaining regional variations in hospitalization. Some figures provided by Blue Cross on the percentage of their members covered for key outpatient services:

	<u>Diagnostic Lab and X-Ray</u>	<u>Outpatient Minor Surgery</u>	<u>Home Care</u>
New England states:	46.8	78.1	62.5
Mountain and Pacific states	42.5	74.4	6.4



6. The age-composition argument is the only "environmental" argument which seems capable of explaining a significant portion of the differential in utilization observed between different states and regions. However, some preliminary analysis of age-composition data indicates that its explanatory value is limited, and that it is a less important determinant of hospital utilization than bed/population ratios. Three conclusions support this:

- a. Age-composition cannot explain the large portion of the differential created by regional variations in length of stay practices, which affect patients in all age groups. For example, a comparison of length of stay data from hospitals in the northeastern and western states indicates that even if admission rates were equal, the longer average lengths of stay in the northeastern hospitals would, by themselves, account for 25% greater hospital utilization.<sup>9</sup> More importantly, the lengths of stay for northeastern hospitals are greater in all age groups, ranging from an average of 1.0 days longer for patients in the youngest age groups, to 1.6-2.0 days longer for adult and middle-age groups, to 3.0-4.5 days longer for patients in the oldest age groups. More than 65% of the admissions are for patients under 50 years old, and the longer lengths of stay for patients in these younger age groups account for a large portion of the differential between northeastern and western states. (A longer discussion of regional variations in lengths of stay practice is given in the next section).
- b. A comparison of age-composition data with hospital utilization rates as summarized in Figure 1, suggests that the two variables are strongly related only in the few states with extremely low utilization rates--i.e. the age-composition of a state's population seems to affect only the extreme lower-left region of the distribution in Figure 1. National averages for age-composition





indicate that 10% of the U.S. population is in the 65+ age group, and that the percentage of residents in this age varies between 8.5% and 12% in most states. Only ten states have a 65+ age group which makes up less than 8.0% of their population, but these relatively "young" states tend to have low hospitalization rates (less than 1,000 patient-days per 1,000 residents), three more have moderately low utilization (1000-1100 patient-days), and one has fairly high utilization (1200+ patient-days). However, for the majority of states which do not have extremely "young" populations (i.e. they have more than 8.0% residents in the 65+ age group) the effect of age-composition on hospital utilization is weaker or--more likely--tends to be dominated by the effect of bed/population ratios. The seventeen states with 8.0%-10.0% of their residents in the 65+ age group have utilization rates which range from less than 900 patient-days to more than 1600 patient-days. The twelve states with relatively "old" populations--more than 11% of residents in the 65+ age group--have utilization rates ranging from 1050 patient-days to 1550 patient-days. In summary: age-composition seems to permit the few states with extremely "young" populations to maintain low hospital utilization. For all other states, the effects of bed/population ratios tend to dominate utilization statistics, and the existence of a "younger" or "older" population does not appear to be a major determinant of hospital utilization.

- c. The best way to explore the effect of age on hospital utilization is to statistically "normalize" the population of one state to see how much predicted utilization is affected by a shift in age-composition. This was done--with relatively crude statistical techniques--to compare the predicted utilization rates of several states which



had a differential in hospitalization of 30% to 40% in 1970. The technique followed was to alter the age-composition of an "older" state's population to reflect the "younger" state's population. By applying the "older" state's existing hospitalization rates (computing number of patient-days per 1,000 residents in the relevant age groupings) to the altered population, a prediction could be made as to how much hospitalization would be reduced by the substitution of the "younger" population while still maintaining existing medical patterns. The results of these computations indicate that the existence of somewhat "younger" populations in some of the low-utilizing states accounts for only a fraction of the differential in utilization between them and the high-utilizing states. In the case of one state which had 35% more utilization than a "younger" state, the substitution of the "younger" age-composition resulted in a predicted reduction in utilization of only 6%. Other computations similarly indicated that the existence of "younger" populations in certain states could only account for 15% to 20% of the variation between high and low-utilizing states.

Massachusetts and California were two of the states whose hospitalization rates were compared in this way. It is often argued that the western state has less hospital utilization because of its generally younger population. To test this argument a population was constructed to reflect the age-composition of California's. Hospitalization rates based on Massachusetts and some other northeastern states were applied to this population and also to an actual Massachusetts population to predict the expected utilization.



(Hospitalization rates based solely on Massachusetts hospitals were not available. However, the rates used were quite representative of the state; N.B. below that the utilization predicted by applying the rates to the actual Massachusetts age-composition is almost exactly the same as the actual Massachusetts utilization in 1970.)

TABLE 1

Massachusetts			California	
Number of patient-days predicted by northeastern rates for 1,000 residents	% in actual Massachusetts Population	Age-group Composition	% in California Population	Number of patient-days predicted by northeastern rates for 1,000 residents
128.0	8.3	0- 4	8.2	127.6
43.6	17.4	5-13	17.5	44.0
144.9	19.1	14-24	19.8	149.8
119.1	11.7	25-34	13.4	136.3
117.3	11.0	35-44	11.8	125.7
246.1	21.3	45-64	20.2	328.4
<u>477.6</u>	11.2	65+	9.0	<u>385.7</u>
1376.7 ← Total patient-days per 1,000 predicted by → 1297.3 Massachusetts-northeastern hospitalization rates applied to two populations				
1369.3 ← Actual Massachusetts patient-days, 1970			Actual California → 1008.9 patient-days, 1970	

The implication of Table 1 is that Massachusetts' "older" population would only account for its having approximately 6 % more hospital utilization than California, if the Massachusetts hospitalization rates were applied to the younger population. The fact that Massachusetts actually has 36%-37% more hospitalization than California suggests that the bulk of the differential--30%-31% is due to the state's medical and hospitalization practices, rather than the age-composition of the population. Presumably, these medical and hospitalization



practices are partly determined by the fact that the state has 27% more hospital beds per 1,000 residents than California.

### LENGTH OF STAY EFFECTS

Hospital utilization has two dimensions: the number of admissions per 1,000 population, and the average length of stay (LOS) for diagnoses. Any attempt to explain high utilization, or to plan decreases in such utilization, must deal with both of these dimensions. However, because of inadequate data on the numbers and types of admissions in Massachusetts, it is easier to deal only with the LOS dimension when comparing the state's high utilization patterns to those of low-utilizing states. Also, when comparing Massachusetts utilization rates with those of the relatively "under-bedded" western and southern states, it is apparent that the differential observed is more a product of the latter states' shorter LOS for diagnoses, than of their lower admission rates. For example, Massachusetts' admission rate per 1,000 residents is 9.5% higher than California's, but the average LOS for most diagnoses in the state's hospitals is 20%-25% longer for the same diagnoses in California.

The following tables show the regional and state differentials in average LOS for all diagnoses, and their relationship to bed/population ratios:

TABLE 2

Region	Average LOS for All Diagnoses		Approximate # of Acute-Care Beds Per 1,000 Residents in Region
	PAC Hospitals	All AHA Hospitals	
PAC (Includes New England, N.Y., N.J., Penn.)	8.6	9.4	4.3
Midwest (Ill., Ind., Mich., Minn., Mo., Ohio, S.D., Wis., W.V.)	8.1	8.6	4.2
South (South Atlantic, Dist. Col., Fla., Ga., Tex.)	7.5	7.6	3.9
West (Alif., Ark., Cal., Colo., Conn., Del., Hawaii, Idaho, Iowa, Kan., Ky., La., Me., Mont., N.D., N.H., N.J., N.Y., Okla., Pa., S.D., Tenn., Tex., Utah, Va., W.D., W.V., Wyo.)	6.4	6.9	3.8

TABLE 3

State	Average LOS for all Diagnoses PAC Hospitals	Admissions per 1,000 Residents	Beds per 1,000 Residents
Massachusetts	9.8	150	4.78
Illinois	9.1	149	4.64
Georgia	6.9	147	3.45
Nebraska	6.1	171	6.71
New Mexico	6.8	128	3.37
California	7.1	142	3.78
Alaska	5.7	83	2.04





These general averages for LOS in different states are not the product of any statistical "quirks", and do not conceal any striking or unexpected patterns--the degree of variance in LOS between different states and regions tends to be about the same for all diagnostic categories, and for patients in all sex, income, and racial categories. The LOS differential between different regions also tends to increase with the patient's age. Stays in California hospitals average about 1.0 days less than stays in Massachusetts hospitals for patients under 35 years of age, are 2.5 days less for patients 35-65, and average about 4.0 days less for patients over 65.

The California/Massachusetts differential in average LOS exists in almost all diagnostic categories. Variations in the differential are illustrated in the following table:

TABLE 4

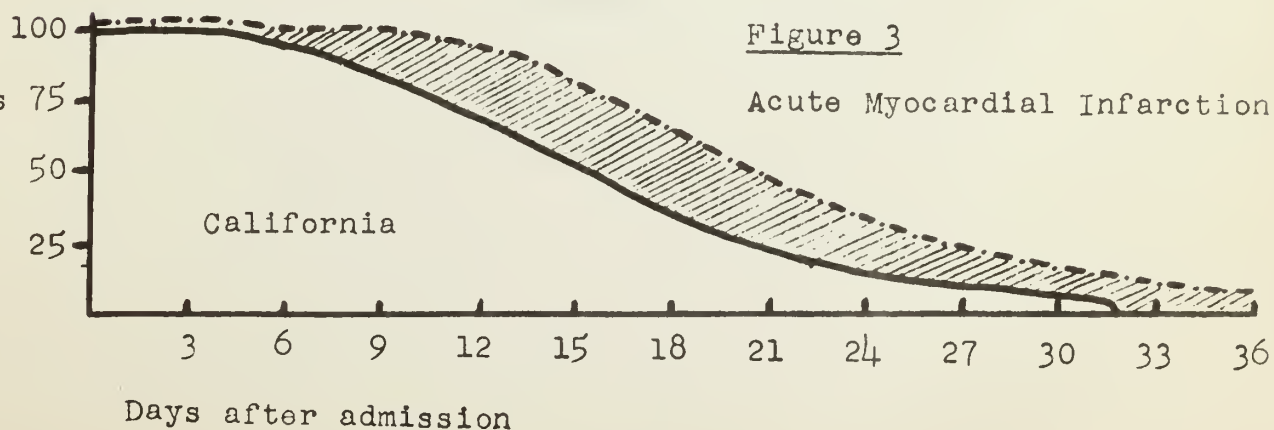
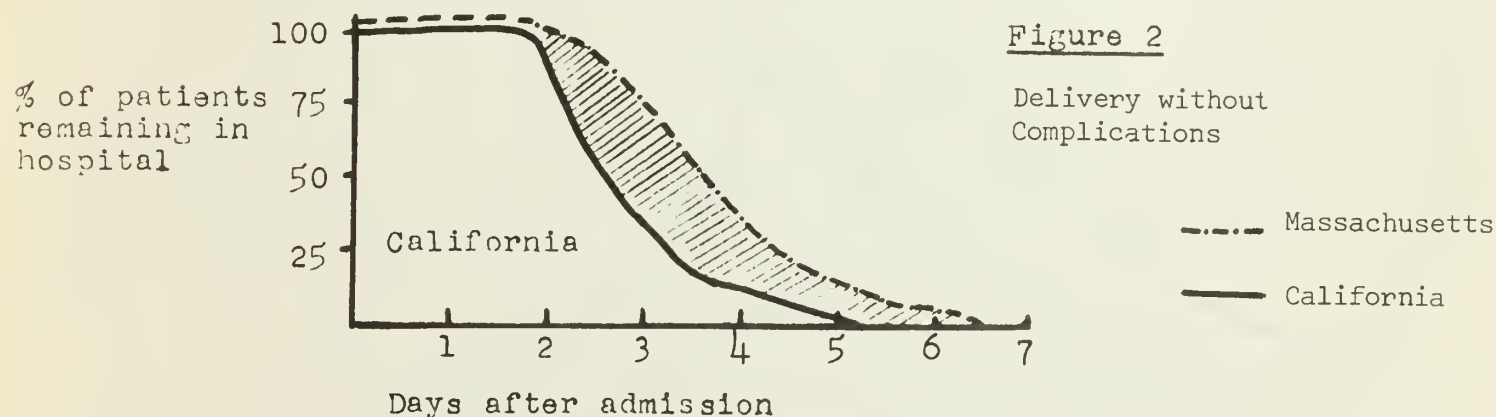
Average Lengths of Stay, in Days,  
for Patients Under 65; Some Common  
Diagnoses:

<u>Diagnosis</u>	<u>Massachusetts</u>	<u>California</u>
Delivery without complication	4.1	3.0
Cholelithiasis	10.9	8.4
Inguinal hernia	5.4	4.3
Pneumonia	8.4	6.7
Acute Myocardial infraction	21.7	16.3
Acute upper respiratory infection	4.9	3.6
Diabetes mellitus	9.9	7.3
Hernia of Abdominal cavity	7.6	6.3
Acute appendicitis	7.0	4.4

Source: Derived from U.I.S. statistics of M.H.A., and from PAS statistics.



The distribution of discharge days for individual diagnoses (i.e. the variance of individual patients' discharges around the statistical median discharge day) is about the same for both high-utilizing states and low-utilizing states. However, the discharge distribution itself begins one or several days earlier in a low-utilizing state like California--i.e. the "cycle" of discharges for patients in a particular diagnostic category begins more quickly after admission. For example, in a California hospital a small fraction of patients in a particular diagnosis--10%-20%--will be discharged a day or two earlier than similar patients in Massachusetts; the median discharge date-- when 50% of the patients with that diagnosis have left--also occurs one or several days earlier in California. In both states the small percentage of the patients who are very aged and infirm, or who have complications with the diagnosis, will remain hospitalized for a considerable period after the median discharge date--thus forming the long "tail" of the discharge distribution.





The effect which the different discharge patterns have on total patient-days can be illustrated by Figures 2 and 3, which show the discharge "cycles" for two common diagnoses in California and Massachusetts hospitals. The shaded areas represent, spatially, the amount of "excess" patient-days for Massachusetts patients with the same diagnosis. Another way of conceptualizing the variation in discharge patterns is suggested by Figure 4, which plots the probability of a patient with an "average" diagnosis being discharged on a given day. The California distribution is similar to Massachusetts', except that it is shifted to the left--to the "short-stay" end of the spectrum. Presumably, this "shift" in medical practice is the result of California physicians having adjusted themselves to working with a limited hospital bed supply over a period of time.

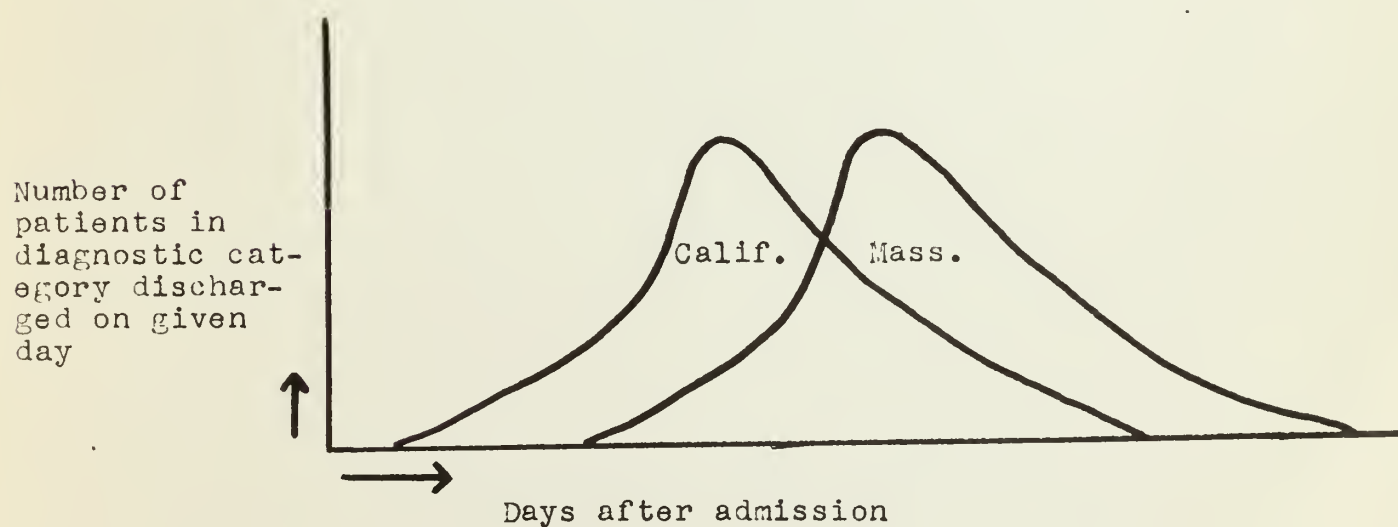


Figure 4



MASSACHUSETTS OFFICE OF  
COMPREHENSIVE HEALTH PLANNING  
POSSIBLE EFFECTS OF UTILIZATION REVIEW

SPRING, 1973





POSSIBLE EFFECTS OF UTILIZATION REVIEW

H.A.S.P., C.H.A.M.P. ETC.

All utilization review programs in the late 1960's and early 1970's which attempted to control hospitalization on an area-wide or state-wide basis were failures -- at least insofar as reducing total patient-days. Highly developed programs such as the Hospital Utilization Program (H.U.P.) in Western Pennsylvania and the A.I.D. re-certification program in New Jersey were capable of producing some initial changes in physicians' behavior; but in the long-term they failed to have any lasting impact on admissions and LOS patterns. The failure of these programs to reduce patient-days can be laid to three major weaknesses: a) their emphasis on retrospective review of a sample of cases, instead of concurrent review of all cases; b) the failure to have decisions on admissions and length of stay reviewed by a physician who is independent of the hospital staff; c) the lack of financial disincentives for hospital stays which exceed LOS norms.

Some more positive results have recently been reported from some area-based programs which were set up to control the hospital utilization of Medicaid patients. These programs include the Sacramento (California) Certified Hospital Admissions Program (CHAP), the Illinois Hospital Admissions & Surveillance Program (HASP), and the New Mexico Foundation for Medical Care (NMFMC, an EMCRO-based organization).

1. On the basis of preliminary data, it appears the NMFMC has been able to reduce the average LOS for Medicaid patients by about 15%. However, it does not appear to have had any effect on admissions, and the admissions rate of the Medicaid population has even risen slightly since the program went into effect. The net reduction in patient-days under the program has probably been 10%-12%.



2. The CHAP claim to have reduced average LOS for Medicaid patients by 25% is highly questionable, since the program's "baseline" figures for utilization appear to have been based on inadequate data and inappropriate LOS averages for that area and population (e.g. 6.0 days was used as their baseline LOS). However, the program does appear to have had some effect on LOS, and an estimate of a 10% reduction in patient-days is probably not unreasonable.
3. Although the data from HASP is not yet complete, it appears to have had a significant effect on LOS. The program was also intended to reduce admissions, but no such effect has been proven yet. The HASP people feel they have established a "firm" reduction of at least 8% patient-days per 1,000 population. However, until figures for the Medicaid population can be stabilized, and an admissions rate established, this 8% reduction can't be completely confirmed. If admissions data does shape up as expected, then a total reduction of 8%-10% patient-days will be likely.

In summary: all three programs have shown the potential to reduce patient-days by 8%-12%, primarily by reducing lengths of stay. All of the programs were designed to reduce admissions, but none have been able to establish such an effect.

Based on the experience with these three programs, it could be expected that any utilization review program which attempts to successfully control utilization by all, or part of, the Massachusetts population would have -- at a minimum -- the following attributes:

a) Statewide normative criteria for lengths of stay in hospitals, broken down by diagnosis, age, sex, etc. Presumably, these criteria would be based on the regional or state medians for LOS in the diagnosis - i.e. the 50th percentile of the PAS regional statistics might be used, as in the HASP program.

b) Concurrent review or hospital stays: in effect, this requires the exertion of some mild "pressure" on the attending physician to discharge the patient by the median discharge-day indicated in the PAS statistics. Extension of the certified LOS would be allowed only when medical necessity could be demonstrated.



c) A central monitoring body which could quickly identify any hospital which discharged a significant portion of its patients after the median discharge-day had passed, or which granted an unusually large number of extensions in certified LOS. This monitoring body must also be able to exert pressure on its local physician-advisors and hospital coordinators to correct any deficiencies found.

The utilization review systems which have been proposed for Massachusetts -- including the Commonwealth Institute of Medicine's CHAMP program -- are based on the HASP model in Illinois, and thus include the key characteristics cited above. Could such a program be successful in Massachusetts? The preliminary data from Illinois suggests that it could. Illinois' hospital utilization problem is, presumably, similar to Massachusetts': the state had 1357.7 patient-days per 1,000 residents in 1970, vs. 1369.3 for Massachusetts. The state's admission rate, average LOS, and bed/population ratio are all roughly similar to Massachusetts (see Table 3). Therefore, a HASP-type program in Massachusetts - if it was as well administered as HASP is, and received the support from organized medicine that HASP does - ought to have the potential to achieve similar success: a reduction in patient-days on the order of 8%-10%.

The key to the success of a HASP/CHAMP - type program lies in applying meaningful pressure on physicians to discharge their patients on the median discharge-day indicated by the PAS statistics (or similar statistics, such as U.I.S.) for the diagnosis. Implicit in this action is the assumption that most days spent in acute-care beyond the PAS median are medically unnecessary - i.e. are for the convenience



of the patient, or due to the physician's inadvertence, etc. The HASP-type system, in effect, takes the median of the prevailing LOS distribution and establishes it as the norm, and then attempts to "chop off the tail" of the LOS distribution. A successful program like this would change the average discharge pattern for Massachusetts from the one illustrated in Figure 4 to something which resembles Figure 5. Achieving the discharge pattern illustrated by Figure 5 would, by itself, reduce the total patient-days of the controlled population by as much as 10%, assuming admissions were held constant.

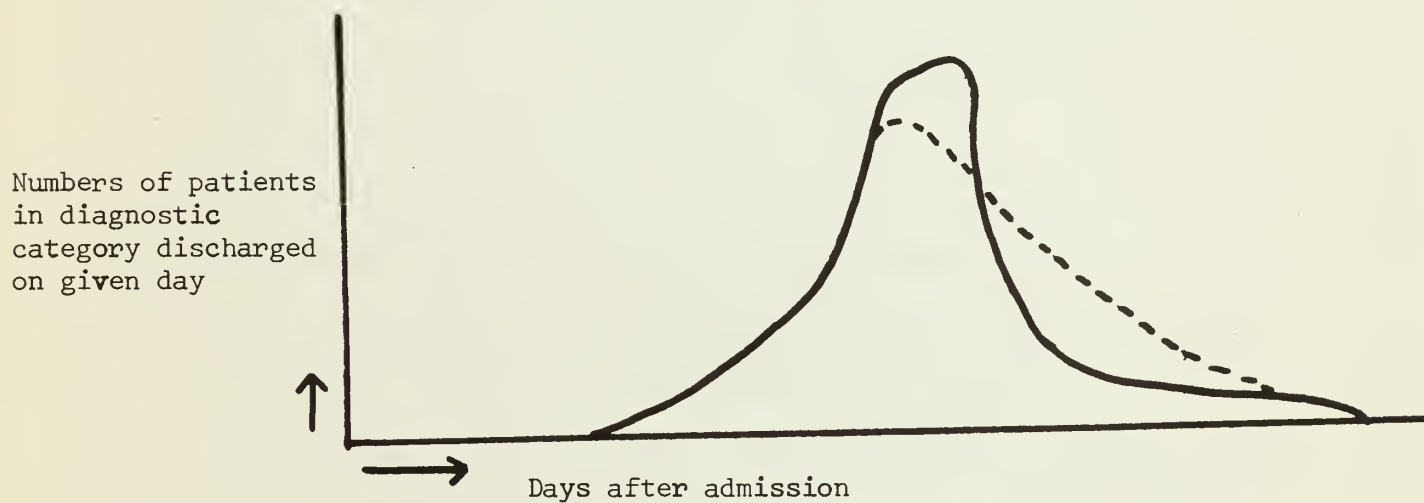


Figure 5

However, this theoretical potential to achieve a 10% reduction in utilization cannot be immediately taken as a "firm" estimate of CHAMP's potential for Massachusetts. There are several important problems to be considered before a HASP/CHAMP-type system is transplanted from Illinois to Massachusetts.

#### Problem of selecting LOS medians

It is important to note the source of the LOS criteria which were incorporated into the HASP program in Illinois, and are proposed for the





CHAMP program in Massachusetts. In Illinois, to date, the certified LOS for each patient's diagnosis has been based on the PAS 50th percentile (median discharge-day) for the PAS Central region. Note, however, from Tables 2 and 3 that Illinois' average LOS for all diagnoses is somewhat longer than the average for all Central region states. With the exception of Nebraska, Illinois hospitals have the longest average LOS of any state in the Central region. Although LOS data broken down by specific diagnoses is not available for Illinois, in view of other data it seems quite likely that the average Illinois stays for most diagnoses have been .5-.7 days longer than the PAS averages for the Central region during the pre-HASP period. Consequently, it appears that the HASP program has imposed criteria for LOS which differed significantly from what had been "prevailing practice" in the state. Not only were HASP physicians pressured to discharge their patients by the median discharge-day (i.e. "chop off the tail" of the distribution), but the normative definition of the discharge "median" was actually shifted to the left on the LOS dimension, as compared to previous practice in Illinois. It seems plausible to assume that some of HASP's success in reducing average LOS in Illinois by 10% was related to the fact that it had (unintentionally?) established norms for LOS which were somewhat shorter than the prevailing medical practice.

(N.B. A distinction has not been made in this discussion between average LOS and median LOS. In terms of actual number of days, the median discharge-day is usually less than the average LOS because of the long "tail" of the discharge pattern. However, the relationship between the two figures is fairly constant in the PAS statistics and other statistics. Hence, it is safe to assume for most diagnoses that a longer average LOS also indicates a latter median discharge-day. The above discussion has treated average LOS as a surrogate for median discharge-day.)



The situation proposed for the Massachusetts CHAMP program may be quite different. The C.I.M. has proposed that CHAMP criteria for LOS originally be based on PAS medians for the Eastern region. This would create a situation different from Illinois, since the present Massachusetts median for many diagnoses are somewhat shorter than the PAS Eastern medians. The reason for this is that PAS figures for northeastern hospitals are statistically dominated by discharges from New York and Pennsylvania hospitals, and these states have longer lengths of stay than Massachusetts. (Total utilization in patient-days/1,000 residents for N.Y. and Penn. is less than Mass., though, because these states have lower admission rates). A comparison of the average LOS for several common diagnoses in Massachusetts hospitals and in the PAS Eastern figures illustrates this point:

TABLE 5

Average LOS, in days, for patients under 65

	<u>Mass. U.I.S. Hospitals</u>	<u>PAS Eastern Hospitals</u>
Pneumonia	8.4	9.1
Cholelithias	10.9	11.1
Diabetes Mellitus	9.9	11.0

SOURCE: U.I.S. statistics from M.H.A., and PAS 1971 Eastern figures.

Based on these averages, it can be seen that for many diagnoses, the PAS Eastern medians will suggest a discharge date which occurs later than the median of present discharge practices in Massachusetts hospitals. The use of the PAS medians in the CHAMP program could



thus have an effect opposite to that of the HASP program in Illinois: the defined norms for LOS would often be longer than prevailing practice.

One way of avoiding this situation would be to base CHAMP discharge medians solely on Massachusetts hospital data. This could be done by employing the M.H.A.'s U.I.S. system, or by contracting with the national PAS to provide diagnostic breakdowns from PAS hospitals in Massachusetts. However, even if this is done, the comparison with the Illinois HASP system suggests that CHAMP might not be effective. HASP achieved a reduction in LOS of 8%-10% partly because it had defined norms which were shorter than the existing practice. Might it not also be necessary in Massachusetts to establish "shorter" medians for LOS in order to achieve the desired reduction of at least 10%?

#### Controlling admissions vs. controlling LOS

Another issue raised by the implanting of a HASP-type system in Massachusetts is the relative importance of controlling optional hospital admissions, as well as lengths of stay. As noted before, HASP, CHAP, and the NMFMC appear to be successful in reducing the LOS component of utilization, but have as yet had no discernible impact on the admissions rate of the Medicaid population. The HASP program was still effective in reducing patient-days, but one reason for this may have been that, relatively speaking, the problem of over-utilization in Illinois was more due to the state's long LOS, than to its admission practices. A crude statistical analysis suggests that about 60% of Illinois' "excess" utilization (compared with national averages) is due to lengthy stays in the hospitals, while 40% is due to a high admissions rate. The situation in Massachusetts is different (see Table 3): 45% of the state's "excess" patient days are due to LOS, while 55% are accounted for by the high



admissions rate. The implication is that controlling optional hospital admissions should be a more important problem in Massachusetts than it was in Illinois.

The HASP-type system has been unable to demonstrate any control over hospital admissions and, indeed, there is little in its administrative apparatus which would enable it to do so. Its "prior approval" program for elective admissions is, apparently, little more than a formality. It should be noted that previous utilization review programs which have attempted to develop standards for elective admissions were unable to accomplish this task. The concept of medical "necessity" for admission to acute-care seems to be intrinsically a more subjective one, for which there is less data available, than a similar concept for length of stay. Hence, norms for admission are considerably more difficult to develop than norms for LOS.

How well can a HASP/CHAMP-type system work in a state where the more important problem is controlling admissions? If the CHAMP system has exactly the same type of impact in Massachusetts as HASP did in Illinois, then it is possible that -- due to differences between the two states -- the actual reduction in patient-days will be considerably less than 8%-10%. This is a problem which should be considered before CHAMP is implemented.

#### Desirability of controlling hospitalization for only part of the population

The preceding discussion has given data to support the assumption that the Roemer-Feldstein effect is a chief determinant of hospitalization. An obvious corollary to the hypothesis would be that if the hospitalization of any significant portion of the population is reduced, then the hospital admissions and lengths of stay of the remaining portion of the population will increase to fill the "vacuum" of empty beds and unutilized





hospital personnel. There is no direct evidence of this effect ever having occurred before. Some indirect evidence is provided by some of the West North Central states (North Dakota, Nebraska) where it appears that the loss or shrinkage of certain segments of the population (such as families migrating out of the state) has led to increased utilization by the remaining population.

It has been suggested that such an effect would take place in Massachusetts if a CHAMP-type system is able to reduce 10%-15% of the patient-days in the Medicaid and Medicare populations. The result would be an increase in the admissions and lengths of stay of the "uncontrolled" population, i.e. Blue Cross subscribers. This is an undesirable outcome in terms of general public policy. Although state and Federal expenditures for Medicaid and Medicare might be reduced or held constant, premiums for Blue Cross and other health insurance would increase sharply. (These premiums are much more regressive than the taxes which pay for Medicare and Medicaid). The population's total cost for hospitalization would also be higher, due to the added cost of the utilization review system.

One obvious way of short circuiting the anticipated Roemer-Feldstein effect would be to make sure that the 10%+ reduction in patient-days for the "controlled" population was accompanied by a corresponding decrease in the number of acute-care beds, and a reduction in hospital personnel. There has been some discussion -- but little evidence -- that something like this has occurred as a result of the utilization review systems in Illinois and New Mexico in some of the larger hospitals which handle Medicaid patients. The existence of these



effects, and ways of augmenting them, should be investigated before an attempt is made to "control" the hospital utilization of only one part of the Massachusetts population.

# BEYOND UTILIZATION REVIEW - ELIMINATING THE REGIONAL DIFFERENTIAL

The preceding discussion of this memorandum helps to identify two major questions: What is the quantity of acute-care hospitalization in Massachusetts which is medically unnecessary? Does there exist any strategy for eliminating much of this over-utilization?

The data presented suggest the following initial conclusions:

1. Massachusetts has 30%-40% more hospital utilization per resident than some other comparable states; i.e. California, Washington, etc.
2. This differential in utilization does not appear to be explained by factors which could account for it on the basis of greater "need" - or medical necessity - in the Massachusetts population.
3. Most of the differential between Massachusetts and the low-utilizing states appears to be explained by the greater availability of hospital beds in this state, or by factors which the hospital beds only indirectly represent.

For the sake of argument, the following hypotheses about hospitalization and medical care can be stated:

1. The greater use of acute-care hospitals in Massachusetts does not, on the average, result in better health care for the patient.
2. The level of health care provided by some of the low-utilizing states, such as California, is at least as good as is provided in Massachusetts. Consequently, the quantity of acute-care hospitalization provided in these states represents an adequate - or even desirable - level of health care.



Neither of these two controversial hypotheses can be either completely confirmed or disproved at the present time. To begin to evaluate their accuracy would require more sophisticated and comprehensive data, and better medical criteria, than are now available to this office. Nevertheless, there is considerable indirect evidence that the two hypotheses are correct. Interpretation of health statistics from California and other states, as well as subjective impressions, lead to the same conclusions. It seems justified, then, to accept these two assumptions as "working hypotheses" until such time as they can be disproven.

If the two above hypotheses are accepted, then it becomes necessary to conclude that at least 30%-35% of the patient-days in Massachusetts hospitals are medically unnecessary. The largest single factor accounting for this degree of over-utilization is the over-supply of hospital beds in the state. More appropriate levels of hospital utilization are found in the western region of the country because of the consistently lower bed/population ratios found in these states.

Furthermore, other indirect evidence suggests that even the 30%-35% estimate of over-utilization is too conservative - even when based on certain criteria of "proper" medical care. For example, the CHAP program in California and the NMFMC program in New Mexico were able to reduce total patient-days of a population by 10%, without any apparent reduction in the quality of medical care. The Kaiser Health Foundations on the west coast have been able to provide what is, by consensus, adequate medical care with only 50%-60% of the patient-days required for the general population in the same states.



(The Kaiser hospitals, not coincidentally, operate with bed ratios of only 1.8-2.0 beds per 1,000 members.) What these experiments in the western region indicate is that it is possible to make substantial reductions in hospital utilization in areas which initially have the lowest admission rates and lengths of stay in the nation. Furthermore, the reductions do not seem to lead to any sacrifice in medical quality. These programs suggest that the proportion of medically unnecessary patient-days in Massachusetts hospitals may, realistically, be as high as 40%-45%.

If unnecessary hospitalization is as extensive as the data suggests, then it is obvious that a HASP type system is inadequate to deal with Massachusetts' over-utilization problem. There is no evidence to suggest that the CHAMP system in Massachusetts could be more successful than the HASP system in Illinois (i.e. 8%-10% reduction of patient-days), and there is considerable evidence which suggests the contrary. Even if the CHAMP system is quite successfully implemented, it will still be dealing with probably less than one-third of the state's over-utilization problem.

The inability of a system to deal adequately with the state's over-utilization problem is a consequence of its failure to come to grips with the regional differentials in hospital utilization existing in the U.S. Viewing just the LOS dimension, it has been shown how the regional differential--created by bed/population ratios--leads to different LOS patterns, as illustrated in Figure 6. The problem with present utilization review systems, such as CHAMP or HASP, is that they tend to reinforce this differential rather than eliminate it. The use of PAS regional statistics to establish criteria for LOS tends to institutionalize the patterns of prevailing practice in the northeast region. It establishes the median-point of prevailing practice (point "A" in Figure 6) as the desirable medi-





cal norm. The main thrust of utilization review, then, becomes the exertion of pressure and "education" on physicians whose discharge patterns fall to the right of this point. By altering the shape of the discharge distribution, as in Figure 6, it is possible for a HASP-type system to reduce total utilization by about 10% patient-days. But this fails to deal with the majority of the unnecessary patient-days, because the system's criteria only reflect medical practice in an "over-bedded" region --the system definition of "medical necessity is region bound.

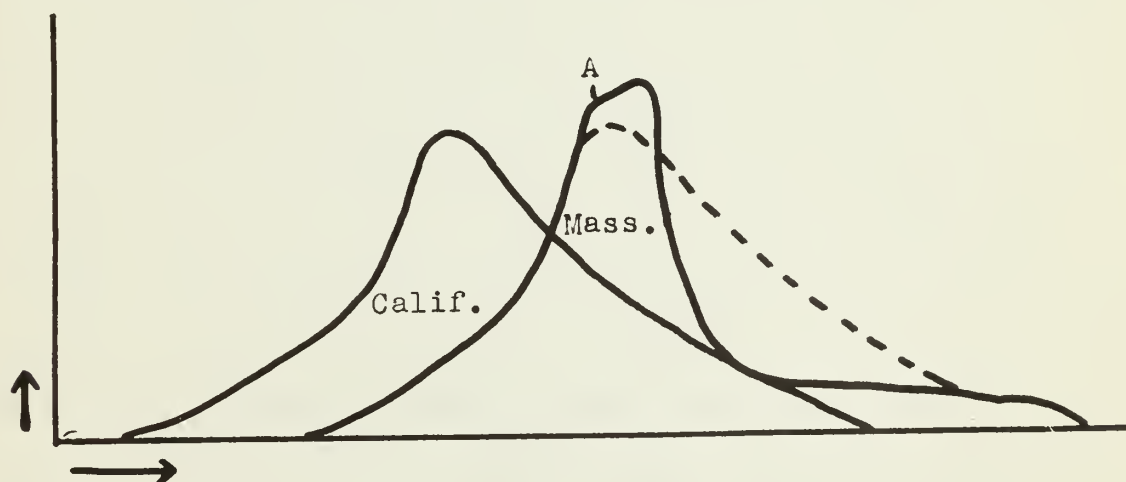


FIGURE 6

There is every indication that future utilization review systems will continue to be "region bound", in the sense of basing their LOS norms, etc., on local or regional practice. If established, the CHAMP system in Massachusetts would probably operate on the basis on PAS Eastern statistics.



### Alternative approaches to reducing utilization

If present patterns are continued, it is obvious that a program more radical than CHAMP will be required to deal with the bulk of Massachusetts' over-utilization. What programs or strategies are available to accomplish this?

Considering only the LOS dimension of utilization--and thinking in the most abstract terms--the obvious solution is suggested by Figure 6: instead of only "chopping off the tail" of the Massachusetts LOS practices and discharge patterns of "under-bedded states onto Massachusetts hospital practice. Shifting the discharge patterns of the state to the left in Figure 6--if such an accomplishment were possible--would reduce Massachusetts patient-days by 20%-25%. Furthermore, the CHAMP and NMFMC experiences suggest that an effective utilization review system can "chop off the tail" of the LOS distribution even in areas with traditionally short lengths of stay. An effective HASP-type system could supplement the altered discharge distribution, and possibly reduce patient-days a further 5%-10%. Assuming that the previously stated hypotheses about medical care are correct, this alteration of discharge patterns could be accomplished without lowering the quality of medical care in the state.

It is more difficult to conceptualize a strategy for reducing the admissions component of over-utilization. Due to present inadequacies of data, it is not possible to define precisely how admissions patterns in the "under-bedded" states differ from admissions in Massachusetts. Two alternative strategies for reducing admissions could be considered: 1) Use of data collected from "under-bedded" regions, and from sources such as the Kaiser Health Foundations, in order to develop normative criteria for non-emergency medical and surgical admissions in the most common diagnoses groups. 2) Designing programs which could artificially generate



the same kind of internal pressures on admissions as are found in chronically "under-bedded" locations.

#### Some Policy Options

This discussion can be concluded by listing some of the alternative policies which might have the potential for dealing with the over-utilization problem as it exists in Massachusetts' hospitals. It should be evident that these policies are logically implied by the preceding discussion:

1. Directly reducing the number of acute-care hospital beds in Massachusetts. Otherwise known as the "clout route", this is the most simplistic solution to the over-utilization problem, and is an obvious implication of the Roemer-Feldstein hypothesis.
2. Indirectly reducing the number of hospital beds through financial disincentives for inappropriate use.
3. Attempting to alter Massachusetts medical practices by implanting and/or imposing criteria for admission and LOS which have been developed from experience in low-utilizing states.
4. Activating a HASP-type utilization review system in conjunction with policy No. 3, supra.
5. Promoting an effort by organized medicine in Massachusetts to critically re-evaluate the state's hospitalization practices. Such a re-evaluation would proceed on the basis of data from low-utilizing states. A massive attempt to "re-educate" Massachusetts physicians would follow.
6. A combination of any of the above.

To successfully implement any of these policies would, obviously create serious problems of a medical, economic, political, and administrative nature. An evaluation of each of these policies, and the implementation problems involved, will be the subject of a future memorandum.



NOTES

1. Anderson, O.W., "What Utilization Review Will & Won't Do", Modern Hospital, 116: 97-100, January, 1971.
2. Berg, Robert L., et al., "Bed Utilization Studies for Community Planning ", Journal of American Medical Association, 207:2411, March 31, 1969.
- 3.
4. Feldstein, Martin S., Economic Analysis for Health Service Efficiency, North Holland Publishing Co., Amsterdam, 1967 Chapter 7.
5. Ibid, Chap. 7, Sec. 7 3.2
6. Phone conversation with Dr. J. Wenberg, Cooperative Health Information Center of Vermont. The full text of this study is not yet available for publication.
7. Phone conversation with Dr. D. Scott, Rhode Island Health Services Research.
8. Journal of American Medical Association.
9. PAS, Length of Stay in PAS Hospitals, West Region, 1970.





Appendix A

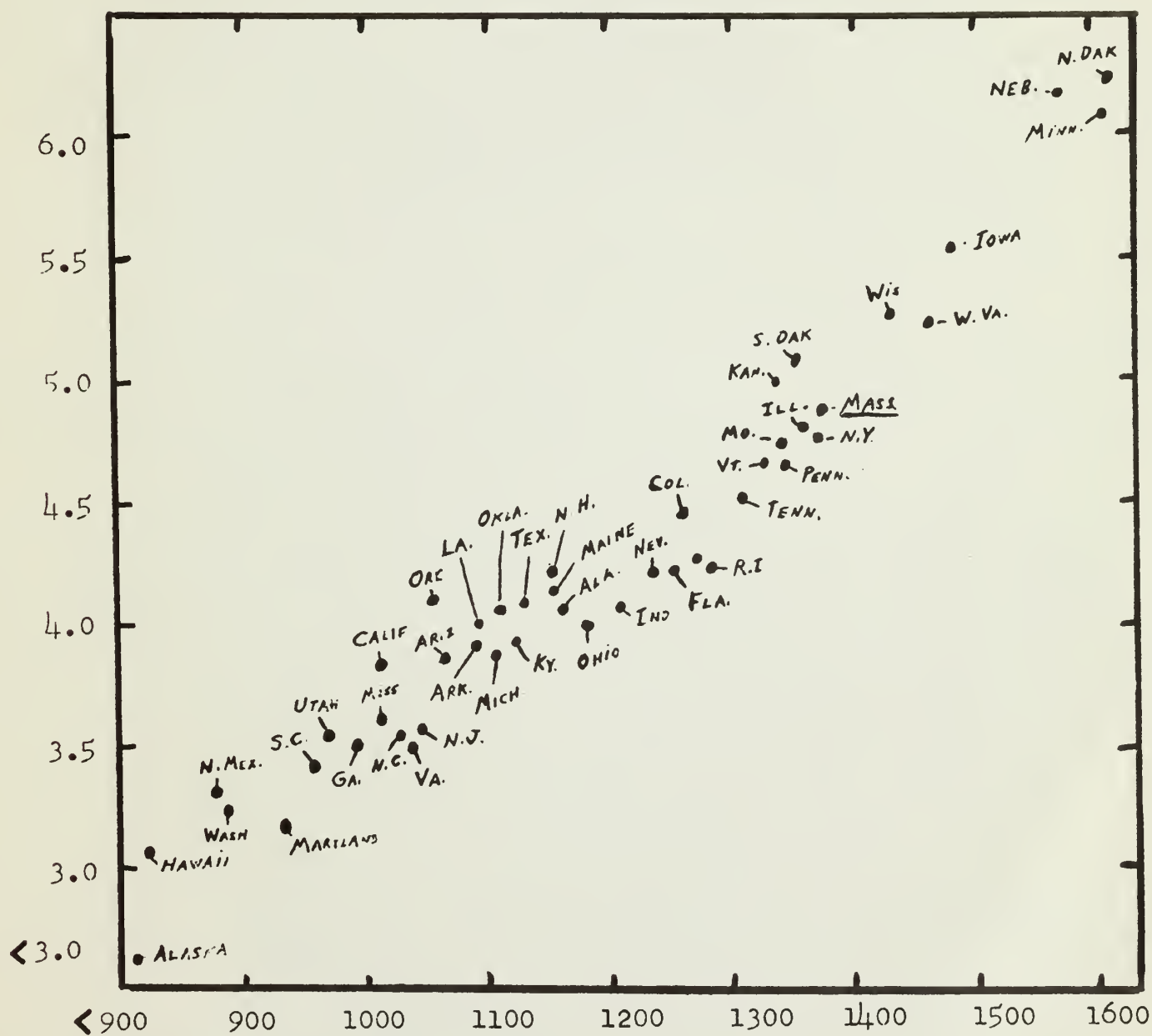


Figure 1 - with states identified





